

**WHAT IS CLAIMED IS:**

- 1 1. A process for the preparation of an epoxidation  
2 catalyst which process comprises:
  - 3 (a) drying a silica gel carrier, comprising  
4 silicon, having a weight average particle  
5 size of from 0.1 mm to 2 mm, at a  
6 temperature of from more than 200 °C to  
7 300 °C; and,
  - 8 (b) contacting the carrier obtained in step  
9 (a) with a gas stream comprising titanium  
10 halide to obtain an impregnated carrier.
- 1 2. The process of claim 1, wherein the drying of  
2 step (a) is performed at a temperature which is  
3 higher than the temperature at which the  
4 impregnation of step (b) is performed.
- 1 3. The process of claim 1, wherein the amount of  
2 titanium halide supplied in step (b) is such that  
3 the molar ratio of titanium halide added to  
4 silicon present in the carrier is from 0.050 to  
5 0.063.
- 1 4. The process of claim 1, wherein the gas stream  
2 consists of titanium halide.
- 1 5. The process of claim 1, in which process the  
2 silica gel carrier has a surface area of at most  
3 500 m<sup>2</sup>/g.
- 1 6. The process of claim 1, wherein the silica gel  
2 carrier is dried for a period of time of from 1  
3 hour to 8 hours.
- 1 7. The process of claim 1, further comprising:
  - 2 (c) calcining the impregnated carrier to obtain a  
3 calcined impregnated carrier; and,
  - 4 (d) hydrolyzing the calcined impregnated carrier.
- 1 8. The process of claim 7 further comprising:

- 2 (e) contacting the carrier obtained in step (d)  
3 with a silylating agent.
- 1 9. The process of claim 8, wherein the drying of  
2 step (a) is performed at a temperature which is  
3 higher than the temperature at which the  
4 impregnation of step (b) is performed.
- 1 10. The process of claim 8, wherein the amount of  
2 titanium halide supplied in step (b) is such that  
3 the molar ratio of titanium halide added to  
4 silicon present in the carrier is from 0.050 to  
5 0.063.
- 1 11. The process of claim 8, wherein the gas stream  
2 consists of titanium halide.
- 1 12. The process of claim 8, wherein the silica gel  
2 carrier has a surface area of at most 500 m<sup>2</sup>/g.
- 1 13. The process of claim 8, wherein the silica gel  
2 carrier is dried for a period of time of from 1  
3 hour to 8 hours.
- 1 14. The process of claim 8, wherein the calcining of  
2 step (c) is performed at a temperature of at  
3 least 500 °C.
- 1 15. The process of claim 8, wherein the hydrolyzing  
2 of step (d) is performed at a temperature in the  
3 range of from 150 °C to 400°C.
- 1 16. The process of claim 8, wherein the silylating  
2 agent comprises hexamethyldisilazane.
- 1 17. A process for the preparation of an alkylene  
2 oxide which process comprises:  
3 contacting a hydroperoxide and an alkene  
4 with a heterogeneous epoxidation catalyst; and,  
5 withdrawing a product stream comprising an  
6 alkylene oxide and an alcohol and/or water,  
7 wherein the catalyst was prepared according to a  
8 process comprising:

- 9 (a) drying a silica gel carrier, comprising  
10 silicon, having a weight average particle  
11 size of from 0.1 mm to 2 mm, at a  
12 temperature of from more than 200 °C to  
13 300 °C; and,  
14 (b) contacting the carrier obtained in step (a)  
15 with a gas stream comprising titanium  
16 halide to obtain an impregnated carrier.
- 1 18. The process of claim 8, wherein the alkene  
2 comprises propene and the alkylene oxide  
3 comprises propylene oxide.
- 1 19. The process of claim 8, wherein the hydroperoxide  
2 comprises ethylbenzene hydrogen peroxide and in  
3 which the alcohol comprises 1-phenyl ethanol.
- 1 20. The process of claim 10, further comprising  
2 dehydrating 1-phenylethanol to obtain styrene.